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INDUSTRIAL EDUCATION IN ILLINOIS UNDER THE SMITH-HUGHES LAW

E. A. WREIDT

State Supervisor of Industrial Education, Springfield, Illinois

FUNDS RECEIVED AND DISBURSED

For the past year, ending June 30, 1918, Illinois received a total of \$93,772.25 as its allotment under the appropriations made by the Smith-Hughes federal law on vocational education.

This allotment covers three funds: one for industrial and home economics education, one for agricultural education, and one for the training of teachers in agricultural subjects, home economics subjects, and industrial subjects.

The fund for industrial and home economics education amounted to \$41,105.92. Of this amount, the State Board used \$9,977.52 to pay one-half of the salaries of teachers of industrial and home economics classes in seven school districts in the state. The unexpended balance in this fund, amounting to \$31,128.40, returns to the United States Treasury.

Of the total allotment to Illinois, \$93,772.25, the State Board was able to use \$26,476.16, leaving a total unexpended balance of \$67,296.09, which returns to the United States Treasury.

The relatively small amounts distributed by the State Board for 1918 are explained by the fact that active promotional work could not be begun before March, 1918. By this time more than half of the school year had passed, and local school authorities found it difficult, and in many cases impossible, to adjust school programs to meet the requirements of the state plans. The courses which the State Board has approved for reimbursement for the past year are therefore in nearly all cases courses established with no thought of meeting

the state requirements. They are courses which have been in operation a long time, in many cases, and have been found to measure up to the requirements of the state plans.

SCHOOLS AND CLASSES REIMBURSED

In the field of industrial education reimbursement was granted in 1918 to one full-time or all-day trade school with an enrolment of sixteen pupils; 1919 will show this extended to six full-time trade schools at present in operation and in all probability to three others about to be established, making a total of nine schools in four cities. The year 1918 showed nine part-time trade extension classes for apprentices in skilled trades, in two cities; 1919 will show twelve part-time classes of this order in five cities. Again, last year there were two part-time general continuation classes for boys fourteen to sixteen years old at work in less skilful occupations. This year already shows an increase in such classes from two to thirteen, with a probability that eight additional classes will be established very soon. The number of cities involved increases from two to seven. The twenty-six evening trade extension classes for adults occupied during the day will increase from twenty-six of last year to at least sixty classes in eight cities in 1919. Grand total enrolment in all industrial classes of 1,221 in 1918 will probably be trebled in 1919.

Detailed descriptions which follow in this article concern themselves with the classes and courses which were in operation in 1918.

Full-time schools.—The first full-time school is a machinist trade school established in Peoria about February 1, 1918, partly as the result of an industrial survey made by the Peoria Association of Commerce, the public-school authorities, and Bradley Polytechnic Institute, in co-operation with the United States Bureau of Education. One of the recommendations of this survey was that a machinist trade school should be established. The co-operation of the union of machinists in

Peoria was secured in the organization of the school. The trade course is conducted in the manual-training high school under the direction of the regular high-school principal and superintendent of schools.

The course of study covers two years, 30 clock hours a week, one-half of the time being given to machine-shop practice under the instruction of a man who has had three years of teaching experience in high school and twelve years of experience as a machinist.

The shopwork is on a productive basis, projects made including machines, machine parts, and tools for the use of the school. In addition to the machine-shop practice the curriculum includes related trade subjects, namely, trade drawing, trade mathematics, trade science, and non-vocational subjects, namely, English, civics, and industrial history.

The 16 pupils enrolled are all graduates of the elementary school and were selected from a group of 32 applicants. Four instructors are employed. The machine-shop instructor devotes one half of his time to this course, the remaining half being given to instruction of regular high-school pupils. Each of the other three instructors gives 60 minutes each day to the machinist course, the remaining portion of his day being devoted to regular high-school pupils. In granting reimbursement for one-half of the salaries of these teachers, the State Board has prorated the salaries on the basis of the proportionate amount of the school week which each instructor devotes to the machinist trade course.

Part-time trade extension classes.—For six years Moline has been conducting a part-time trade extension class for apprentices in the machinist and pattern-making trades. The class was originally organized under the auspices of the Tri-City Manufacturing Association. It is now conducted under the auspices of the Board of Education of Moline.

During the year 1917-18, 92 apprentices were enrolled. Each apprentice attends the part-time school one-half day a week for the school term, being paid by his employer for the time spent in school. The classes are limited to 10 apprentices and meet in an elementary-school building. Sessions are held each morning and afternoon except Wednesday and Friday afternoons, when the instructor visits the factories having apprentices enrolled in the school. Eleven different factories were represented by apprentices in the school last year.

The subjects taught are trade drawing, blueprint reading, English, including civics and industrial studies, and shop mathematics, including arithmetical operations and the elementary portions of applied algebra, applied geometry, and applied trigonometry.

One instructor does all the teaching and gives his entire time to this work. He is a graduate of the University of Illinois, has done some postgraduate work, and has had about five years of practical trade experience. The present instructor has been in charge of the school since its organization in 1912 and has done pioneer work in developing a course of study adapted to the needs of apprentices. The course has heretofore included 126 clock hours for each year, but the school authorities were glad to lengthen the course by 18 hours in order to meet the minimum of 144 hours per year required in the state plan.

Since March 4, 1918, the Rockford Board of Education has been conducting three types of part-time classes: type one is for boys at work between the ages of fourteen and sixteen who attend the part-time school eight hours each day for two weeks and return to work for the following period of two weeks; type two is for boys at work between fourteen to sixteen years of age who attend school a half-day every day and return to work for the other half-day each day; type three is for boys over sixteen years of age at work in the machinist trade, in drafting, and in electrical work. Types one and two are general

continuation part-time classes; type three is a trade extension part-time class. In all three types of classes the instruction is to a large extent individual.

The trade extension part-time class, type three, was formerly conducted under private auspices, but was taken over by the Board of Education on March 4, 1918. About 60 pupils were enrolled in this class last year. The subjects in the course of study are trade drawing, trade mathematics, English, civics, history, and discussion of the tools, machines, processes, and materials in machinist and electrical work.

Four instructors give their entire time to teaching in the trade extension course and in the two general continuation courses. All of these instructors have had at least two years of college training and considerable practical experience. One is a college graduate and another is a graduate of an engineering school.

During the past year Chicago conducted seven part-time trade extension classes; one for apprentices in electrical work, one for machinist apprentices, one for carpenter apprentices, one for sheet-metal apprentices, one for jeweler apprentices, one for baker apprentices, and one for plumber and gasfitter apprentices. These seven courses were conducted in three of the regular high schools in Chicago. One of the courses, that for carpenter apprentices, has been in operation since 1901. Other courses have been in operation a number of years.

All the courses are conducted by the Board of Education of Chicago, and in most cases agreements are made between associations of employers and employees requiring the apprentices to attend. With a few exceptions there is no deduction from the wages of the apprentices for the time spent at school.

Apprentices attend school one or two half-days a week except in the case of the carpenter-apprentice school, which is in session six hours a day, five days a week for twelve weeks during January, February, and March, which is the dull

season in the carpenter trade. This carpenter-apprentice school, although it is a full-time all-day school for the twelve weeks in which it is in session, is nevertheless classified under the Smith-Hughes law as a part-time school for the reason that the apprentices give a part of their working-year to school attendance.

The course of study in these part-time trade extension courses includes, for the jeweler apprentices for example, instruction in practical trade processes only; for baker apprentices, instruction in practical trade processes and in related trade subjects, such as chemistry for bakers; for the machinist apprentices, related trade subjects, such as trade drawing and trade mathematics, and non-vocational subjects; for the carpenter apprentices, shopwork in carpentry, related trade subjects, such as trade drawing and trade mathematics, and non-vocational subjects, such as English and history.

Teachers experienced in the trade are in charge of all the instruction in practical trade subjects. For the related trade subjects, such as shop mathematics and shop drawing, the instructors have either had extensive experience in the trade or have had extensive training in technical subjects and have developed the ability to relate the instruction to trade needs.

Part-time general continuation classes.—Only two part-time general continuation classes received reimbursement from the State Board in the past year. These two classes were conducted by the Board of Education of Rockford. As already explained, they were started March 4, 1918, and are intended for boys between the ages of fourteen and sixteen who have left school for work on work permits. The boys in this school are organized into two types of classes: first, a group which attends school on full time for two weeks and returns to work for the following two weeks on full time; second, a group which attends school one-half day each day and returns to work for the remaining half-day each day.

In this general continuation school instruction is given in the following subjects: mechanical drawing, applied mathematics, civics, English, and vocational guidance. Vocational guidance here includes a discussion of the opportunities, advantages, disadvantages, and qualifications required for employment in machine, electrical, woodworking, automobile, and other trades and industries. It also includes visits to factories and some shopwork in the school shops.

Evening trade extension classes.—Chicago is the only city to receive reimbursement during the past year for evening trade extension courses, twenty-six classes receiving aid the past year. The courses included three classes in electrical construction, one for machinist apprentices of a locomotive repair-shop, eleven in general machine-shop practice, two in blacksmithing and toolmaking, two in trade drawing, one in machine design, two in baking, and one in foundry. These twenty-six classes were conducted in five different high-school buildings.

In all cases the students enrolled were engaged in the day time in work to which the instruction in the evening classes was strictly supplementary. The instructor in all cases has had extensive trade experience and wide teaching experience.

PROSPECTS FOR THE CURRENT YEAR

Full-time schools.—The machinist trade school in Peoria is being continued this year.

Rockford has started a machinist trade school with the opening of the current school year.

Chicago is considering several full-time or all-day trade courses for the present year: courses in mechanical drafting and in the electrical and machinist trades for boys, in the dressmaking and glovemaking trades for girls, and a course in architectural drafting in the fourth year of the high-school curriculum.

Rock Island is considering a one-year full-time course in mechanical drafting.

Geneseo is considering the establishment of a trade school of the general industrial type to prepare students to engage in general woodworking in the community and in occupations which require skill in closely related woodworking trades, such as carpentry, cabinet-making, and millwork. Such a trade school is called a general industrial school to distinguish it from what is called a "unit-trade school." The unit-trade school is appropriate for larger industrial centers where the trades are highly specialized. It provides for a given group of pupils instruction in one trade only. The general industrial school, on the other hand, furnishes to a group of pupils instruction in two or more closely related trades. Such a school is suitable in smaller industrial centers where combination workers are needed with a knowledge of two or more closely related trades.

Part-time classes.—In Moline the trade extension part-time school is being continued.

In Rockford the trade extension and the general continuation part-time classes for boys will be continued. Rockford is also considering the establishment of general continuation classes for girls between the ages of fourteen and sixteen, so that the girls may have the same opportunities as the boys in this age group now have.

LaSalle has started a trade extension part-time course for machinist apprentices.

Rock Island has in the past conducted a part-time trade extension course for carpenter apprentices, the classes meeting in January, February, and March. The supervisor was unable to visit this school last year before it closed for the year, and is unable to say positively that the school will be resumed this year. Rock Island is also considering the establishment of part-time classes in salesmanship for girls employed in department stores.

Alton, at the time of the supervisor's last visit, was definitely considering the establishment of general continuation part-time classes for boys and girls between the ages of fourteen and sixteen.

All of the seven trade extension part-time classes in operation in Chicago last year will probably be continued this year. In addition, Chicago has started what may be called a trade preparatory part-time class for workers on automatic screw machines. This class was begun as a war-emergency class to meet the needs of Chicago factories having war contracts. According to the arrangements made for these classes, men who had had little or no previous experience in the operation of automatic screw machines were to be hired by the employers, placed on the company pay-roll, and were to be sent at once to the school to receive training. The men were to spend in school eight hours each day, five and one-half days a week, for several weeks, all of this time under pay from the employers. At the end of their period of school training they were to begin regular employment in the factory. Notwithstanding the fact that in this school the men give their entire time to school work, the school is classified as a part-time school under a recent ruling of the Federal Board for Vocational Education, on the ground that the men are definitely scheduled for employment before beginning the school work and hence are giving a part of their working-year to school attendance.

During the past few years Chicago has been conducting a number of part-time schools giving instruction in commercial subjects, such as bookkeeping, stenography, and other office work. Before July 1, 1918, the Federal Board had ruled that federal money could not be used for instruction in commercial subjects, but since that date it has modified its position and now rules that instruction in commercial subjects may be given in part-time classes. This ruling of the Federal Board very greatly extends the opportunities for part-time instruction

in the state, especially in the larger cities where there is great need and opportunity for part-time instruction in salesmanship and other commercial subjects.

Chicago has been conducting four such part-time commercial schools for persons employed in the offices of the packing companies in the stockyards district; also one large part-time commercial school in the downtown office district of the city for persons employed in offices and for persons seeking office employment.

Springfield has during the past year been conducting part-time classes giving instruction in commercial subjects to women and has recently established part-time general continuation classes for boys and girls between the ages of fourteen and sixteen years who left school before completing the eighth grade. These general continuation classes meet Saturday mornings from 8:00 to 12:30 in the high-school building and receive instruction in English, arithmetic, citizenship, hygiene and elementary science, shopwork for boys, and cooking and sewing for girls. Where employers desire it, arrangements have been made for pupils in the regular day schools to work Saturday mornings in the shops and stores in the places left vacant by the continuation-school pupils.

The type of organization established in Springfield for the general continuation classes may be suggestive to others considering the formation of such classes. The problem of securing teachers is simplified by the fact that the classes meet Saturday morning when the teachers are free from their regular teaching work. All the shop and laboratory equipment of the high school is also available on Saturday morning. The pressure upon employers caused by employees attending continuation school on working time may also be relieved by the fact that on Saturday mornings the regular day-school pupils are free to take the places of such employees.

The great need of the hour in the field of industrial education is the establishment of part-time schools throughout the state. When local school authorities are first approached regarding industrial courses, they are as a rule most interested in full-time or all-day schools. On mature consideration, however, they are readily convinced that there is a relatively limited need for the highly specialized all-day trade school meeting the requirements of the Smith-Hughes law. Such full-time schools are needed mainly in the larger industrial centers.

On the other hand, the need for part-time schools is widespread. This is especially true for part-time classes of the general continuation type for persons fourteen to sixteen years of age who are in unskilled or semi-skilled occupations and who need a continuation of their general education in subjects which are designed to promote good citizenship and in subjects which are related as closely as possible to their daily work or to the occupation which they desire to follow in the future.

The interest in part-time continuation classes is spreading rapidly throughout the state. The Committee on Children in Industry of the State Council of Defense has a paid worker who has been visiting many of the cities in the state in an attempt to interest these cities in the establishment of part-time general continuation classes for boys and girls at work between fourteen and sixteen years of age. This committee is also endeavoring to promote the establishment in these cities of a vocational guidance or an employment supervision bureau.

The Illinois Federation of Women's Clubs, through its committees on education throughout the state, is also endeavoring to enlist the co-operation of employers and school authorities in the establishment of part-time continuation classes for boys and girls at work between fourteen and sixteen years of age.

Evening classes.—Chicago was the only city which received reimbursement for evening classes last year. Such classes in operation in some half-dozen other cities in the state were discontinued before the supervisor had an opportunity to pay them a formal visit. There are many industrial communities in the state which should offer evening classes in trade extension subjects, especially in trade drawing.

Teacher-training courses.—An important part of a state program for industrial education is the early establishment of training courses to prepare teachers. For the practical subjects and for the related trade subjects in industrial schools and classes teachers are needed who have had considerable experience in the trades and who also know how to teach. The combination is not easily obtained. Persons who have had extensive practical experience in the trades have not always had much general education, and only in rare cases have they had experience in teaching or preparation for teaching. On the other hand, many of the experienced teachers in the state lack the important qualification of extensive practical experience in the trades. Hence it is necessary in the early stage of a state program for industrial education to establish training courses to prepare teachers of the practical trade subjects and of the related trade subjects.

Two types of such teacher-training courses have already been started in Illinois. One was conducted at the University of Illinois in the summer session of 1918. To this course persons were admitted who had had practical experience in woodworking trades and who also had some teaching experience in woodworking trades and who also had some teaching experience in elementary or high school. Two courses or subjects were offered: one course on the principles of woodworking, including practice in university shops; and a course on "industrial education," a lecture course dealing with the aims, objectives, and methods of industrial education and the operation of the federal law on vocational education.

The other teacher-training course thus far established is an evening course conducted in Chicago by the University of Illinois. To this course are admitted men who have had at least two years of journeyman experience in the machinist trade and whose general education is at least equivalent to that of the elementary school. The classes meet two hours an evening, three evenings a week, twenty weeks a year for two years, a total of 240 clock hours. Instruction is given in trade drawing, trade mathematics, trade analysis, trade science, industrial geography, industrial history and citizenship, sanitation and safety, industrial education, English, and supplementary shopwork. Observation and practice teaching are required, the regular evening trade extension classes in the Chicago schools being utilized for this purpose by courtesy of the Board of Education of Chicago. Additional evening teacher-training courses for shop teachers will probably be established in the near future for other trades and in other industrial centers in the state.

Plans are also under consideration for training courses to prepare teachers of related subjects such as trade drawing, trade mathematics, and trade science, and for training courses to prepare teachers of general continuation subjects or general education subjects in part-time and full-time schools. Although the state plans for these training courses are not yet matured, the requirements for graduation must include the completion of four years of high-school work and at least two years of college work in order to meet the standards fixed by the State Board for the qualifications of teachers of related and general education subjects. Observation and practice teaching will be an essential part of all teacher-training courses.